means of subdividing genera of the Nuculidae. The first to do so appears to have been Defrance, in 1825, the latest seems to have been Schenck (1934), who proposes the following classification:

(A) Forms with denticulate ventral margins:
  (1) *Nucula* Lamarck, 1799
  (2) *Pronucula* Hedley, 1902
  (3) *Pectinucula* Quenstedt, 1930
  (4) *Linucula* Marwick, 1931
(B) Forms with smooth inner ventral margins:
  (5) *Nuculoma* Cossmann, 1907
  (6) *Nuculopsis* Girty, 1911
  (7) *Nuculoidea* Williams and Breger, 1916
  (8) "*Nuculopsis*" Woodring, 1925
  (9) *Leionucula* Quenstedt, 1930
  (10) *Palaeonucula* Quenstedt, 1930
  (11) *Ennucula* Iredale, 1931
  (12) *Brevinucula* Theile, 1934
(C) Forms with divaricate sculpture:
  (13) *Acila* H. and A. Adams, 1858
  (14) *Truncacila* Schenck, *in* Grant and Gale, 1931
(D) Systematic position uncertain:
  (15) *Deminucula* Iredale, 1931
  (16) *Protonucula* Cotton, 1930
  (17) *Nucula tuberculata* Gabb, 1873

Cox (1940, pp. 10–11) has taken exception to the use of denticulations, stating:

> One difference between the Jurassic and earlier forms and the Recent genotype of *Nucula* lies in the absence of the internal marginal denticulations which characterize that species. Such denticulations are not, however, present in all the Recent species, some of which have completely smooth margins, while others (*N. obliqua* Lamarck, *N. expansa* Reeve, *N. superba* Hedley), smooth margined to the naked eye, may be seen under a lens to have very finely denticulate margins. The denticulation of the margins appears, therefore, to be a matter of degree and not a clear basis for generic separation. The complete absence of denticulations in the earlier fossil forms is, however, significant.

The significance of this argument is somewhat impaired, however, when it is realized that all three of the species mentioned specifically are representatives of *Ennucula* Iredale, 1931, the first, "*Nucula*" *obliqua* Lamarck, being the type of the subgenus. This group was differentiated from *Nucula* s.s., in part on hinge characters, as well as on the supposed absence of denticulations. It would seem, however, that on the basis of these microscopic denticulations, the subgenus *Ennucula* must be transferred from Schenck's group B (above) to his group A. The final sentence in the quotation given above serves, however, to emphasize the unique nature of the marginal pectination observed in *Nuculoidea opima*, and together with the nature of the hinge, and especially of the chondrophore, to stress the generic entity of *Nuculoidea*. This genus, too, must be removed from Schenck's group B, but in view of the difference between the pectinate structure developed by the striations, and the typical denticulate structure present in *Nucula* s.s., it would seem to require the recognition of a separate group for its reception.

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BOTANY.—Muhlenbergia minutissima (*Steud.*) *Swallen and its allies.*[1] Charlotte Goodding Reeder,[2] Osborn Botanical Laboratory, Yale University. (Communicated by Jason R. Swallen.)

Critical study of the annual species of *Muhlenbergia* has revealed the need for several changes in synonymy, as well as the desirability of describing a new species in this large and complex genus. These changes are presented in this paper.

Recently Swallen published the results of his study of the "Awnless Annual Species of *Muhlenbergia*" (Contr. U. S. Nat. Herb. **29**: 203–208. 1947). From the material that in the North American Flora (**17**(7): 485–486. 1937) was treated as only four species (of

[1] Received July 28, 1949.

[2] I am indebted to Dr. Frank Gould, of the University of Arizona Herbarium (ARIZ), and to Dr. H. A. Gleason, head curator of the New York Botanical Garden (NY), who kindly lent material

Sporobolus), Swallen has recognized eight species, two of which he described as new. In so doing, he segregated *Muhlenbergia minutissima* (Steud.) Swallen as a distinct species, adding at the end the remark (op. cit., p. 208): "Typically, the lemma is quite awnless, but occasionally there is a very short awn or mucro, indicating a relationship with *M. texana* and a transition from the awnless to the awned species of *Muhlenbergia*." Since *M. texana* Buckl. was not included in his discussion or key, attempts to find means of distinguishing it from *M. minutissima* led to a detailed study of it and its close allies.

With his brief description of *Muhlenbergia texana*, Buckley (Proc. Acad. Nat. Sci. Philadelphia 1862: 90. 1862) cited no specimen, simply stating: "Northern Texas. May." Gray's commentary on Buckley's paper (Proc. Acad. Nat. Sci. Philadelphia 1862: 334. 1862) indicates that no specimen bearing this name came to Harvard University or to the Academy of Natural Sciences in Philadelphia, although one at the latter herbarium marked "*Agrostis barbatis* Buckl." seems to fit the description, and as Gray remarked: "This is a form of Sporobolus ramulosus." An examination of the material in the Philadelphia Academy[3] reveals that the above-mentioned specimen bears no data as to collector or locality of collection. It is evident from Buckley's paper itself, and particularly from Gray's critique that many of Buckley's species are based on Charles Wright numbers, and the present case is probably no exception. Swallen states[4] that the specimen of *Wright 736* (collected in expedition from western Texas to El Paso, N. Mex., May–Oct. 1849) at the U. S. National Herbarium appears to be identical with the sheet of *Agrostis barbatis* Buckl. in Philadelphia and may well represent the same collection. Bush, who attempted to locate specimens of *M. texana*, states (Amer. Midl. Nat. **7**: 41. 1921): "Hitchcock writes me that Wright's no. 736 is the only specimen [of *M. texana*] in the U. S. National Herbarium from the United States." Buckley's mention of "May" as the time of collection seems further evidence that his description was based upon this Wright specimen. Since the time of collection on that sheet is given as "May–October 1849," Buckley could easily have copied only the "May." It seems significant that the majority of the specimens examined were collected from August to October, and had Buckley himself been the collector he would hardly have made such an error. It seems safe, therefore, to consider that *Wright 736* is the plant upon which Buckley based his description. When that specimen was critically examined it was found to fit unmistakably into *M. minutissima* (Steud.) Swallen, and *M. texana* Buckl. becomes accordingly a synonym of that species. The revised synonymy is as follows:

Muhlenbergia minutissima (Steud.) Swallen, Contr. U. S. Nat. Herb. **29**: 207. 1947.

Agrostis minutissima Steud. Syn. Pl. Glum. **1**: 171. 1854.

Muhlenbergia texana Buckl. Proc. Acad. Nat. Sci. Philadelphia 1862: 91. 1862.

Muhlenbergia Buckleyana Scribn. Contr. U. S. Nat. Herb. **1**: 56. 1890. (Based on *M. texana* Buckl. Name changed because supposed to be a later homonym of *M. texana* Thurb., 1874.)

Podosaemum texanum (Buckl.) Bush, Amer. Midl. Nat. **7**: 41. 1921.

Sporobolus minutissima (Steud.) Hitchc. Proc. Biol. Soc. Washington **41**: 161. 1928.

For the citation of representative specimens see Swallen (Contr. U. S. Nat. Herb. **29**: 207–208. 1947).

This and the following species are closely related and, to those not thoroughly familiar with the group, the distinctions may seem too slight for specific designation. The most useful characters for differentiating them seem to be the longer spreading pedicels and the slightly shorter lemmas with distinctly shorter awns in *Muhlenbergia minutissima*. Although the lemmas rarely have awns 1 mm or more in length, for the most part they are either lacking or not over 0.5 mm

for this study. Specimens have also been examined in the U. S. National Herbarium (US) through the courtesy of Jason R. Swallen, and in the Chicago Natural History Museum (F) through the kindness of Paul C Standley. Specimens in the Herbarium of Yale University (YU) have also been studied. I am especially indebted to my husband, Dr. John R. Reeder, for his aid in the preparation of the manuscript.

[3] I am indebted to Jason R. Swallen for examining and verifying the material in Philadelphia, as well as for supplying notes on the specimens there.

[4] In personal communication.

long. Moreover, the long-awned spikelets seem to occur at the tips of the panicle branches, while the lower spikelets are awnless or short-awned.

There remained specimens, largely from Mexico, with only a few from Arizona and New Mexico, which did not fit the description of *Muhlenbergia minutissima* and which had heretofore been referred to *M. texana* Buckl. Since no name was found to be available, a new one is here proposed:

Muhlenbergia eludens C. Reeder, sp. nov.

Annua 15–40 cm alta; culmis erectis vel adscendentibus 2–4-nodosis, gracilibus teretibus simplicibus vel e nodis inferioribus ramosis, strigosis saltem infra nodis; vaginis carinatis scaberulis vel plus minusve puberulis quam internodis plerumque brevioribus; ligula membranacea erosa vel lacerata, 1.5–2.5 mm longa; laminis plerumque erectis anguste linearibus involutis saltem in sicco, 1–10 (plerumque 2–5) cm longis, circiter 1 mm latis, supra pubescentibus, subtus scabris vel plus minusve puberulis; paniculis patentibus anguste pyramidalibus saltem 2/3 altitudo herbae aequalibus ad 7 cm latis, axi scaberula vel substrigosa, ramis capillaribus scabris adscendentibus vel late patentibus, inferioribus plerumque 2.5–5 cm longis, ramis secundariis paucis circiter 0.5 cm longis; pedicellis gracilibus adpressis scabris circiter 0.5–2.0 mm longis, infra spiculam dilatis; glumis subaequalibus (gluma prima paullo breviore), 1-nervis, acutis, acuminatis vel attenuatis, 1–2 mm longis pubescentibus saltem apicem versus; lemmate subhyalino (arista 1.5–3.5 mm longa exclusa) circiter 2–2.5 mm longo, 3-nervo, apice bifido, marginibus et nervo centrali saltem basim versus sericeo, callo minute sericeo; palea glabra lemmati subaequali; antheris circiter 0.5–0.6 mm longis; fructibus maturis circiter 1.5 mm longis.

United States: New Mexico: Datil Forest, *Koogler K-1* (*Forest Service 50696*) (US). Arizona: Cochise County: Rucker Canyon, Chiricahua Mountains, *Gould & Haskell 4589* (ARIZ), Reef Mine, Huachuca Mountains, *Darrow, Gould, Phillips & Pultz 1490* (ARIZ).

Mexico: Chihuahua: Sánchez, *Hitchcock 7664½* (US); Miñaca, in bed of rocky run, alt. about 2,100 meters, *Hitchcock 7768* (ARIZ, US, YU, Type) October 13, 1910; near Chihuahua, *Pringle 399* (F, NY, US) (wet ledges of rocky hills), *400* (F, NY, US) (on gravel bars of streams); Sierra Madre, *Pringle 3052* (NY, US), (*sine coll. no.*) (US); Río Negro, *Le Sueur 0196* (US); Noragachi, *Palmer 3d* in 1885 (US). Durango: Sandia Station, alt. about 2,000 meters, *Pringle 13629* (US).

The new species resembles *Muhlenbergia minutissima* in having pubescent glumes and an open panicle, but that species differs in having longer capillary pedicels (2–4 mm long) and smaller spikelets (1–1.7 mm long), in which the glumes are slightly shorter. The lemma is shorter and bears an awn only 0.1–0.5 (rarely to 1.0) mm long.

Muhlenbergia eludens is also closely related to *M. flavida* Vasey, in which the glumes are aristate

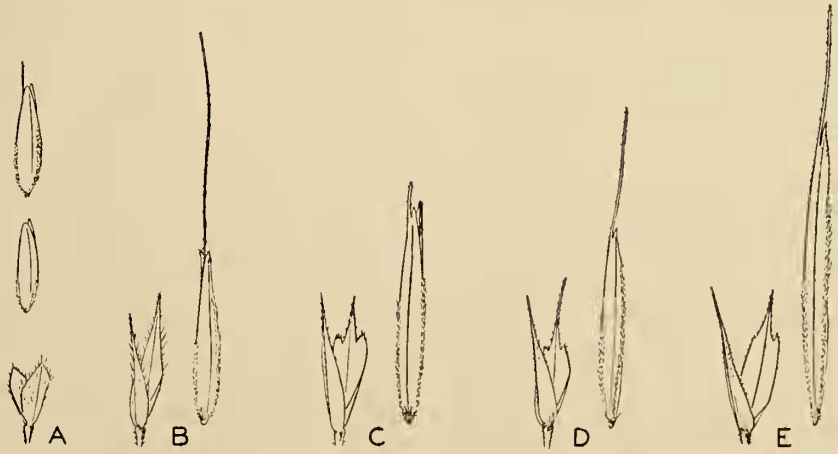

Fig. 1.—Spikelets of *Muhlenbergia minutissima* and its allies: A, *M. minutissima*, awnless floret and glumes (*Fendler 986*) and awned floret (*Wright 736*); B, *M. eludens* (type); C, *M. schmitzii* (*Pringle 8951*); D, *M. flavida* (*Palmer 645*); E, *M. strictior* (*Pringle 1418*). All × 10.

but not uncommonly also with a short tooth on one or both sides of the midnerve. The glumes are, moreover, glabrous or scabrous near the apex, rather than pubescent, and the lemmas tend to be longer (2.5–3 mm). A further difference is seen in the inflorescence which comprises less than half the total height of the plant.

Since *Muhlenbergia eludens* has several close allies, the following key and notes are included as an aid in the identification of members of this complex:

1*a*. Glumes glabrous or scabrous, at least near the apex.
  2*a*. Plants 50–75 cm tall; lemma mucronate or short-awned (the awn not more than 0.5 mm); anthers 1–1.5 mm long. *M. schmitzii*
  2*b*. Plants commonly not over 35 cm tall; lemma with an awn 1.5–2 mm long (rarely longer); anthers 0.5–0.8 mm long.
    3*a*. Lemma 2.5–3 mm long; panicle open (1–4 cm. wide), the branches ascending. *M. flavida*
    3*b*. Lemma mostly 3.5–4 mm long; panicle mostly contracted (1 cm or less wide), the branches appressed. *M. strictior*
1*b*. Glumes pubescent to short pilose.
  4*a*. Pedicels 2–4 mm long, spreading; lemma 1–1.7 mm long, awnless or with an awn 0.1–1.0 (mostly 0.1–0.5) mm long. *M. minutissima*
  4*b*. Pedicels mostly not over 2 mm long, appressed; lemma 2–2.5 mm long, with an awn about 1.5–3.5 mm long. *M. eludens*

Muhlenbergia schmitzii Hack., Ann. Nat. Hofmus. Wien **17:** 255. 1902. (Type from Mexico, *Schmitz 380*.)

M. Diehlii M. E. Jones, Contr. West. Bot. **14:** 13. 1912. (Type from Mexico, *M. E. Jones 7316*.)

Mexico: Chihuahua: Sierra Madre Mountains, Guayanopa Canyon, alt. about 1,500 meters, *M. E. Jones 7316* (US). Hidalgo: Canales Station, alt. about 1,800 meters, *Pringle 8951* (F, NY, US). Mexico: Temascaltepec, Comunidad, alt. 2,460 meters, *Hinton 1565* (NY, US). Without precise locality, *Schmitz 380* (F, US).

Muhlenbergia flavida Vasey, Contr. U. S. Nat. Herb. **1:** 282. 1893. (Type from Mexico, *Palmer 645* in 1886.)

Mexico: Jalisco: Río Blanco, *Palmer 645* in 1886 (US, YU); ravines near Guadalajara, alt. about 1,500 meters, *Pringle 11749* (F, US).

Muhlenbergia strictior Scribn. ex Beal, Grasses N. Amer. **2:** 263. 1896. (Type from Mexico, *Pringle 1418*).

M. flavida Vasey var. *strictior* (Scribn. ex Beal) Scribn. ex Urbina, Cat. Pl. Mex. 394. 1897. *M. madrensis* M. E. Jones, Contr. West. Bot. **14:** 12. 1912. (Type from Mexico, *M. E. Jones 7315*.)

Mexico: Chihuahua: Sierra Madre, *Pringle 1418* (F, NY, US), *1699* (US), *3034* (F, NY, US); Round Valley, alt. about 2,100 meters, *M. E. Jones 7315* (US); Sánchez, *Hitchcock 7673* (US); Miñaca, alt. about 2,100 meters, *Hitchcock 7765* (ARIZ, NY, US, YU). Durango: Sierra Madre Occidental, El Salto, Pineland Canyon, alt. 2,500–2,530 meters, *Pennell 18513* (US); Sandia Station, alt. 2,000 meters, *Pringle 13630* (US). Federal District: Valley of Mexico, *Pringle in 1903* (US).

Presumably the grasses that Pringle collected in Mexico in 1887–88 were sent to Scribner for determination. Both the specimen Beal cited (*Pringle 1418*, Sept. 1887) and the one cited by Urbina (*Pringle 3034*, Oct. 1888) bore the printed herbarium name "*Muhlenbergia flavida* Vasey var. *strictior* Scribner," which was, however, never published by Scribner. These two specimens have been examined by the writer and are certainly conspecific.

Beal lists under *Muhlenbergia strictior:* "*M. flavida* var. *strictior* Scribn. ined." This cannot be considered the basonym, nor does it constitute publication of the variety since according to the International Rule (art. 40): "A name of a taxonomic group is not validly published when it is merely cited as a synonym." Therefore, *M. strictior* is actually a new species described by Beal but credited to Scribner and should be cited "Scribn. ex Beal."

Urbina, in using the name *Muhlenbergia flavida* var. *strictior*, apparently did not realize, as did Beal, that it was ined. Since, however, the name *M. strictior* Scribn. ex Beal, published a year earlier, was based on the same material (although not on the same specimen) for all practical purposes it seems proper to consider that Urbina's variety was based upon that species. The correct citation for the variety is, then: *M. flavida* Vasey var. *strictior* (Scribn. ex Beal) Scribn. ex Urbina.

Hitchcock states (North American Flora 17(6): 438. 1935) in regard to *Muhlenbergia flavida* var. *strictior*: "Differing [from the species] only in the contracted panicle." Examination of the types and other available material reveals, however, that there are other differences. Although the glumes are 1.5–2 mm long in both cases, the relationship of glumes to floret is not the same due to a difference in the floret length, which is about 1 mm longer in *M. strictior*. Whereas in *M. flavida* the glumes are about two-thirds as long as the floret, in *M. strictior* they are scarcely half as long. In view of these differences, which appear to be as significant as those separating other species in the genus, it seems advisable to reinstate the name which was used by Beal.

Although *Pringle 3034* is unusual in having the panicle branches somewhat stiffly spreading, they are not slender and lax as are those of *M. flavida*. In all other characters it agrees well with the type of *M. strictior*.

ENTOMOLOGY.—*Notes on some West Indian Chrysomelidae.*[1] Doris H. Blake, Arlington, Va.

This paper deals with six new species of Chrysomelidae from the West Indies that have come to the writer's attention as well as notes on certain changes in the generic status of two other described species.

Alethaxius bruneri, n. sp.

Fig. 6

About 3 mm in length, oblong oval, dark lustrous green with reddish antennae, mouthparts, and tarsi, the tibiae a little darker and the femora tending to be piceous; one male, possibly immature, paler in color with reddish elytra having a green luster, the legs and body beneath reddish; all femora toothed, female with nodules on sides of elytra; thorax densely and finely punctate, not quite twice as wide as long, with two lateral teeth.

Head shining green with reddish-brown mouthparts, upper part with scattered punctures becoming denser lower down between the eyes; in one specimen a little pit on the vertex, sometimes a median impressed line; eyes entire. Antennae reddish brown or darker, about half the length of the beetle, first two joints swollen, third and fourth not so long as fifth, last five joints longer and thicker. Prothorax not quite twice as wide as long, with two lateral teeth, a broad tooth anteriorly and a smaller one at basal angle; except around the margin the surface very densely punctate. Elytra of female with tubercles along sides from the prominent humeri to the middle; in male these lacking; a slight lateral depression below the intrahumeral sulcus; basal third densely punctate, the punctures then becoming sparser and irregularly 8-striate. Body beneath dark brown or piceous, finely alutaceous and with fine white pubescence. All femora toothed; tending to be dark brown or piceous in color, the tibiae and tarsi paler. Length 2.7–3.2 mm; width 1.6–1.8 mm.

Type male and 3 paratypes, U.S.N.M. no. 59313.

Type locality.—Palma Mocha to Pico Joaquin, Sierra Maestra, Cuba, elevation 3,500–5,300 feet, collected on May 18, 1948, by J. Acuña and J. Ferrás.

Other localities.—Sierra Maestra, 3,600–3,900 feet, collected on May 15–16, 1948, by J. Ferrás.

Remarks.—This is smaller and greener and less densely punctate than the coppery colored *A. turquensis* Blake and has a wider prothorax and darker femora.

Blepharida irrorata Chevrolat

Blepharida irrorata Chevrolat, Rev. Mag. Zool. (2) **16**:182. 1864.
Haltica adspersula Suffrian, Arch. für Naturg. **38** (1): 185. 1868.
Disonycha adspersula (Suffrian), Junk Catalogue.

S. C. Bruner has recently sent me a specimen identified by Manuel Barro as *Disonycha adspersula* (Suffrian). On comparing it with Suffrian's description, I find that it agrees with that species. However, it is simply the dark color form of *Blepharida irrorata* Chevrolat, and Chevrolat's name antedates Suffrian's by four years. Suffrian assigned this color form simply to *group b* under *Haltica*, with no indication that he believed it to be a *Disonycha*.

[1] Received July 27, 1949.